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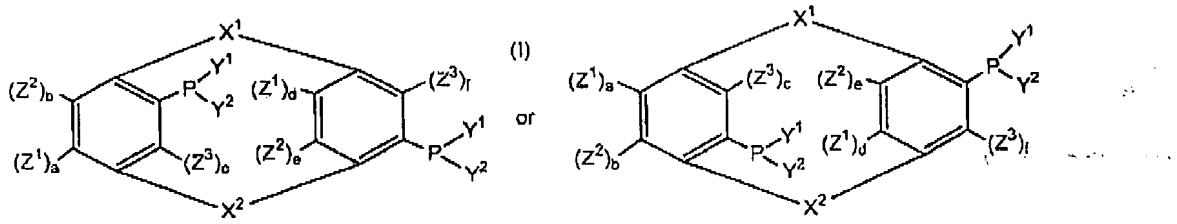
Listing of Claims:

1. (Currently Amended) A substituted paracyclophane of formula (I)



(I)

or

wherein X^1 and X^2 are linking groups comprising between 2 to 4 carbon atoms, Y^1 and Y^2 are selected from the group consisting of hydrogen, halide, oxygen, nitrogen, alkyl, cycloalkyl, aryl and heteroaryl, and Z^1, Z^2 and Z^3 are substituting groups selected from the group consisting of:

(i) C1-C30 branched or linear alkyl, aryl, aralkyl or alkaryl groups,

(ii) ~~that optionally contain~~ functional groups selected from the group consisting of halide, hydroxyl, alkoxy, carbonyl, carboxyl, anhydride, methacryl, epoxide, vinyl, nitrile, nitro, sulphate, sulphonyl, silyl, mercapto, amino, amine, imine, amide and imide, and

(iii) C1-C30 branched or linear alkyl, aryl, aralkyl or alkaryl groups bearing thereon one or more of said functional groups,

wherein a, b, c, d, e and f are 0 or 1, and (a + b + c + d + e + f) = 1 to 6.

2. (Original) A substituted paracyclophane according to claim 1 wherein X^1 and X^2 are both $-C_2H_4-$.

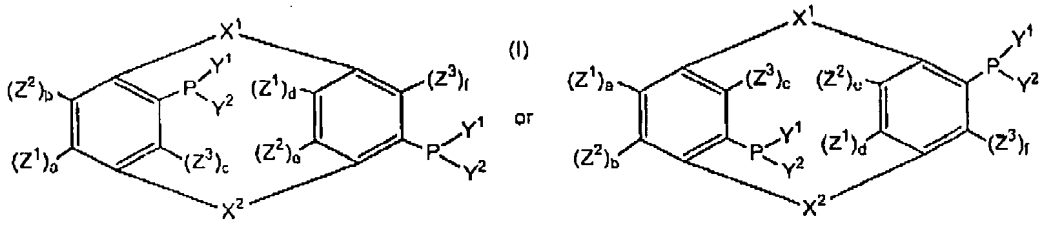
3. (Currently Amended) A substituted paracyclophane according to claim 1 wherein Z^1, Z^2 and Z^3 are substituting groups selected from the group consisting of $-CH_3$ (Me), $-C(CH_3)_3$ (tBu), $-CH(CH_3)_2$ (iPr), $-C_6H_5$ (Ph); fluoroalkyl groups of formula $-C_xH_yF_z$ (where x is 1 to 10, y is less than 2x, including 0; and z = 1 to 2x+1), vinyl $-CH=CH_2$, iodide -I, nitrate $-NO_2$, $-N=CPh_2$, alkoxymethylene or alkoxy groups of formulae $R'OCH_2-$ or R'O- (where R' = H, alkyl C1-C30, aryl, alkaryl or silyl); carbonyl XC(O)- (where X = H, halide, or alkyl C1-C30), carboxyl $R''O_2C-$ (where R'' = H, alkyl C1-C30, aryl or alkaryl); and amino R'R''N-, $R'R''NCH_2-$ or R'R''NCO- (where R' and/or R'' = H, alkyl, or alkaryl), ~~wherein at least one of Z^1, Z^2 and Z^3 is substituting group selected from C1-C30 branched or linear alkyl or phenyl, naphthyl or anthracyl groups.~~

4. (Currently Amended) A substituted paracyclophane according to claim 1 wherein one or both of the benzene rings in the paracyclophane bears a substituting group in the para (Z^1) position to the $P(Y^1Y^2)$ group. ~~wherein at least one of Z^1, Z^2 and Z^3 is a substituting group comprising one or more functional groups selected from the group consisting of halide, hydroxyl, alkoxy, carbonyl, carboxyl, anhydride, methacryl, epoxide, vinyl, nitrile, nitro, sulphate, sulphonyl, mercapto, amino, amine, imine, amide and imine.~~

5. (Previously Presented) A substituted paracyclophane according to claim 1 wherein $(a + b + c + d + e + f) = 1$ or 2.

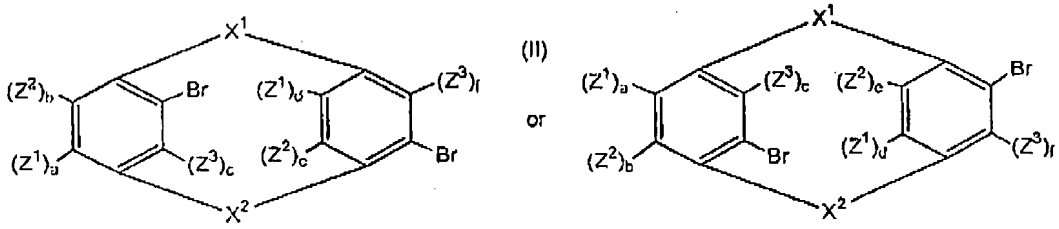
6. (Previously Presented) A substituted paracyclophane according to claim 1 wherein $(a + b + c) = 1$ or $(d + e + f) = 1$, or both of these.

7. (Currently Amended) A method for preparation of a substituted paracyclophane of (I) by,



(I) or

(a) performing a substitution reaction on a pseudo-ortho dibromoparacyclophane to form an intermediate substituted pseudo-ortho dibromoparacyclophane of formula (II), and



(II) or

(b) reacting the substituted pseudo-ortho dibromoparacyclophane with a phosphorus compound comprising $P(Y^1Y^2)$, wherein X^1 and X^2 are linking groups comprising between 2 to 4 carbon atoms, Y^1 and Y^2 are selected from the group consisting of hydrogen, halide,

oxygen, nitrogen, alkyl, cycloalkyl, aryl ~~and~~ heteroaryl, and Z^1, Z^2 and Z^3 are substituting groups selected from the group consisting of:

(i) C1-C30 branched or linear alkyl, aryl, aralkyl or alkaryl groups,

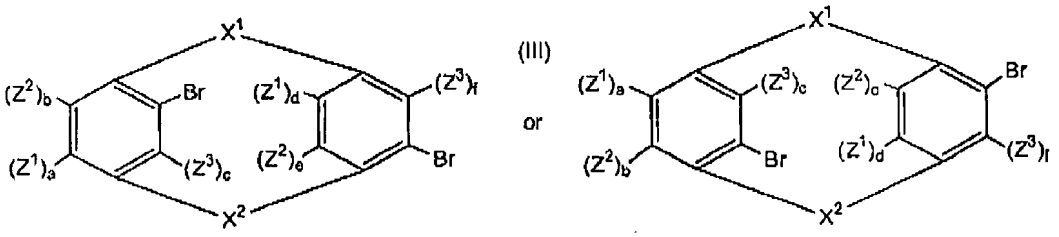
(ii) ~~that optionally contain~~ functional groups selected from the group consisting of halide, hydroxyl, alkoxy, carbonyl, carboxyl, anhydride, methacryl, epoxide, vinyl, nitrile, nitro, sulphate, sulphonyl, silyl, mercapto, amino, amine, imine, amide and imide, and

(iii) C1-C30 branched or linear alkyl, aryl, aralkyl or alkaryl groups bearing thereon one or more of said functional groups,

wherein a, b, c, d, e and f are 0 or 1, and (a + b + c + d + e + f) = 1 to 6.

8. (Original) A method according to claim 7 wherein the substitution reaction is a Lewis-acid mediated electrophilic substitution.

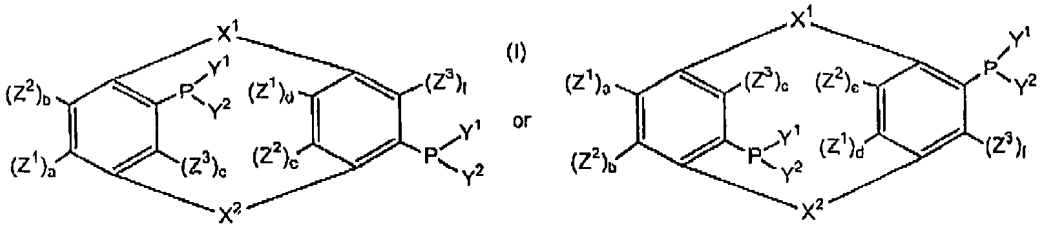
9. (Previously Presented) A substituted pseudo-ortho dibromoparacyclophane of formula (III)



wherein X^1 and X^2 are linking groups comprising between 2 to 4 carbon atoms, Z^1, Z^2 and Z^3 are substituting groups at least one of which comprises a functional group selected from the group consisting of hydroxyl, alkoxy, carboxyl, anhydride, methacryl, epoxide, vinyl, nitrile, nitro, sulphate, sulphonyl, mercapto, sulphide amino, amine, imine, and imide, a, b, c, d, e and f are 0 or 1, and (a + b + c + d + e + f) = 1 to 6.

10. (Original) A substituted pseudo-ortho dibromoparacyclophane according to claim 9 wherein the functional group is a carboxylic acid functional group or an amino functional group.

11. (Currently Amended) A metal complex comprising the reaction product of a metal compound and a substituted paracyclophane of formula (I)



wherein X^1 and X^2 are linking groups comprising between 2 to 4 carbon atoms, Y^1 and Y^2 are selected from the group consisting of hydrogen, halide, oxygen, nitrogen, alkyl, cycloalkyl, aryl and heteroaryl, and Z^1, Z^2 and Z^3 are substituting groups selected from the group consisting of:

(i) C1-C30 branched or linear alkyl, aryl, aralkyl or alkaryl groups,

(ii) ~~that optionally contain~~ functional groups selected from the group consisting of halide, hydroxyl, alkoxy, carbonyl, carboxyl, anhydride, methacryl, epoxide, vinyl, nitrile, nitro, sulphate, sulphonyl, silyl, mercapto, amino, amine, imine, amide and imide, and

(iii) C1-C30 branched or linear alkyl, aryl, aralkyl or alkaryl groups bearing thereon one or more of said functional groups,

wherein a, b, c, d, e and f are 0 or 1, and (a + b + c + d + e + f) = 1 to 6.

12. (Original) A metal complex according to claim 11 wherein the metal compound is a compound of palladium (Pd), platinum (Pt), rhodium (Rh), iridium (Ir) or ruthenium (Ru).

13. (Previously Presented) A metal complex according to claim 11 wherein the substituted paracyclophane (I) is substantially enantiomerically-pure.

14. (Previously Presented) A metal complex according to claim 11 wherein the metal complex is supported on a solid support.

15. (Currently Amended) A method of asymmetrically hydrogenating a substrate comprising contacting the substrate with hydrogen in the presence of a catalytic amount of a metal complex according to claim 12.

16. (Previously Presented) A method of catalysing a chemical reaction, the method comprising contacting one or more reactants with a metal complex according to 12, wherein the chemical reaction is selected from the group consisting of carbon-carbon coupling reactions, the enantioselective isomerization of olefins, asymmetric hydroboration reactions, asymmetric cyclisation of olefinic aldehydes, asymmetric arylation reactions, asymmetric alkylation reactions, and aminations of aryl halides according to the Hartwig-Buchwald reaction.